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10 June 1982

Worldwide Report

TELECOMMUNICATIONS POLICY,
RESEARCH AND DEVELOPMENT

(FOUO 12/82)



FOREIGN BROADCAST INFORMATION SERVICE

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JAPAN

EXPANSION OF NHK OVERSEAS SERVICES PLANNED

OW100959 Tokyo THE DAILY YOMIURI in English 3 May 82 p 2

[Text] The government plans to beef up Radio Japan, the nation's international wireless service run by NHK (Nihon Hoso Kyokai; Japan Broadcasting Corporation), to meet the growing demand for homeland news from the many Japanese living abroad, it has been learned.

The plan is also part of a government attempt to help ease trade and other strains with Western countries through sending Japanese messages directly to their peoples.

Increased transmission power and expanded broadcasting hours as well as the establishment of another relay station abroad is envisioned in the plan.

Radio Japan is an official broadcast beamed to 18 segmented regions of the world in 21 different languages including Japanese, and it is on air for a total of 37 hours (over all regions) a day.

Much of its content is independently produced by NHK, a semigovernmental institution, but the government shares roughly one quarter of the 4 billion yen a year required for international broadcasting.

The idea was fueled when Radio Japan won renewed recognition as the only news source for Japanese residents in Poland during the upheavals late last year.

The programs sent to Poland were relayed by a Radio Japan station in Portugal. It is the only overseas relay station maintained by NHK and its daily operation is limited to one hour.

The government wants to establish at least one more relay station abroad. Among the sites being considered is Panama because of its optimum location for coverage of North and South America.

The reinforcement plan also calls for international broadcasting at least twice the present power along with an extension of broadcasting hours.

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Its broadcasts are sent from the Yamata transmission station of Kokusai Denshin Denwa Company (KDD) in Ibaraki-Ken. Its 12 transmitters are weak by international standards, only up to 100 kilowatts as against 500 kilowatts of the United States, Soviet Union and China.

The government plans to send fact-finding missions to Britain, France and other Western nations this coming autumn before finalizing the plan.

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MAURITIUS

BRIEFS

TELECOMMUNICATIONS WITH REUNION--On 5 May, at Port Louis, Cable and Wireless began operating a new numeric microwave network between Reunion and Mauritius. The system was installed by Cable and Wireless of Mauritius with the assistance of the French Postal and Telecommunications Service. [Excerpts] [Paris MARCHES TROPICAUX ET MEDITERRANEENS in French 14 May 82 p 1291] [COPYRIGHT: Rene Moreux et Cie Paris 1982]

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INTERNATIONAL AFFAIRS

BRIEFS

EUROPEAN AGENCY NEW SATELLITE--The European Space Agency, of which the UK is a partner, is about to embark on a major new spacecraft programme--an unmanned "remote sensing satellite"--which can study the earth's mineral and other resources and monitor their use. The cost of the programme is expected to be at least 100M pounds covering both the first satellite, ERS-1 and, eventually, a series of further satellites. ERS-1 is expected to be ready for launching by 1987. Much work on the programme still has to be done, including determining who the contractors to the programme will be. The countries participating will include the UK and Belgium, France, West Germany, Italy, Spain, Sweden, Switzerland, Norway and Canada, with Denmark and Holland also likely to join in. The finance available so far will enable the definition phase to begin soon, in which the programme's scope will be settled. The final step--hardware development--will be taken at the end of next year. [Text] [PM211515 London FINANCIAL TIMES in English 21 May 82 p 8] [COPYRIGHT: The Financial Times Ltd, 1982]

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FRANCE

THOMSON OUTLINES COMPUTER STRATEGY: NEW TECHNOLOGY CENTER CREATED

Paris ZERO UN INFORMATIQUE in French Mar 82 pp 27-40

[Excerpts] The Enterprise Information and Communication Systems Group (GICE) at Thomson-CSF has set itself the goal of increasing its turnover four-fold in five years

Led by Jacques Imbert, general director, and Francois Duffaux, assistant general director, the group combines the activities of SEMS (Electrical, Mechanical, and Signals Company), of private telephone systems, and of office automation, together with Thomson-CSF's "systems".

At the end of 1981 the group's total turnover should equal 1.5 billion FF based on 18 percent to 20 percent growth in 1982 and on even stronger growth in the years to follow (thanks notably to the startup of new telecopy product lines and office automation systems.) If these projections are correct the figure would reach 6 billion FF in 1986 (representing 25 percent of the French market), half of it going to exportation.

Three development options have been selected: personal computers for professional use; integrated office automation products and systems; and real-time miniprocessors.

Personal and Professional at the Same Time

For professional personal computers, Thomson's Xavier Thevenet (of the office data processing department) is now in charge of installing a network of distributors and licensees for the launching next March of Micromega, the group's first microcomputer, developed by the company's American subsidiary, Fortune Systems Corporation.

Software for this product will be developed either by the SSCI members of the Thomson group or, for certain sector applications, by the licensees involved. Expectations are high for this slot, which is growing rapidly (50 to 100 percent per year at present) and which meets the needs of small management systems whose prices range from 40,000 to 80,000 FF.

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For office automation and distributed data processing, about which Jacques Imbert states that "our vocation has just been confirmed in writing by the Ministry of Industry", GICE's director adds: "We will thus be one of the main axes of French office automation." Meanwhile Thomson has just put on the market the two B 4000 and T 4000 lines of Corail terminals, which cover the main features of distributed data processing and of office automation.

These terminals combine products developed by DAP and by Convergent Technologies, an American firm (AWS and IWS single- and multi-terminal systems). It is well known that this agreement with the American partner had received the upstream attention of public authorities.

Processors as Well

The components of this Corail system, "first elements of an ambitious line", so called because they can be integrated into Thomson's autonomous local information networks (Rail) within the same establishment, are compatible with IBM (by 3276 emulation) or with CII-HB (Questar emulation); they are independent or interconnected, programmable or not (various languages available), outfitted with high level text editing software, and they offer a complete range of possibilities within a price range of 30,000 to 150,000 FF.

With Corail, Thomson hopes to reach a turnover of 300 million FF in 1982, essentially from large SSCI (40 percent), public administration and enterprises (40 percent), regional service companies (15 percent), and PMI (5 percent).

Abroad, Thomson's export structure is aiming for 15 percent of the turnover in 1983 and 30 percent in 1984.

Real-Time Less Likely

The last development strategy is real-time miniprocessors. The group's prospects are least secure in this slot. The first order of business is to pursue the internal development of the Mitra-Solar lines. Three products are to be introduced in March: top of the line Mitra 625, custom designed for transactional management; and two Solar products, the bottom of the line 16/30 on a single card for process automation and control, and the new top of the line 16/85 equipped with a foreground processor for real-time scientific processing.

Next and more important is to bolster the Mitra-Solar lines "which remain competitive" (to quote Mr Imbert), with 32-bit devices whose compatibility would be assured at the software level. But in order to guarantee the staffing and development of the Echirolles plant, SEMS "must have immediate access to the specific 32-bit computer market, particularly in the field of industrial science."

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In addition, after condemning the agreement with Systems under pressure from public authorities, Thomson must within a short delay, at the urging of the latter, enter into negotiations with CII-HB to examine terms of fabrication and marketing by SEMS, of the Mini 6 with 32-bits (originating at Honeywell and not yet being manufactured by CII-HB), in order to fulfill the intent of entering into this market.

In the longer range, around the SEMS and CII-HB research resources combined for the purpose and reinforced by various research teams, the Dieli is considering the creation of a national society for industrial development, which would study and implement design proposals for future minis around 1985.

Optimistic Future

The National Symposium on Research and Technology, opened by Francois Mitterrand on 13 January, may not always have kept its promises but it did show the determination of the government to get out of crisis by significantly increasing research, which according to the President represents (one of the crucial keys and perhaps the only key to renewal."

Two New Paris Centers

Soon after the symposium ended, the Council of Ministers announced the creation of the Center for the Study of Advanced Systems and Technologies (CESTA) which will be located on the premises of the former Ecole Polytechnique. Its main goal will be to bring its contribution to the development and dissemination of new technologies, while analyzing and preparing the ground for their assimilation into the social, economic, and cultural structures of French society.

To this end, CESTA will have four major tasks: study and research (with a scientific projection structure to be established); assistance for technologic options; training; execution, and dissemination. Specifically, CESTA will provide liaison with regional and national associations established as a result of the symposium, in order to ensure the best use of the body of analyses and proposals which will accrue.

The following week, still before the Council of Ministers, Jean-Pierre Chevenement specified, in connection with the creation in Paris of the World Center for the Development of Data Processing, which will be presided by Jean-Jacques Servan Schreiber and will operate under the supervision of the Ministry of Research and Technology, that the Center, "crossroads for ideas and knowledge in microprocessing, will have significant resources and will associate the best international specialists in this field with French researchers. It will set the conditions for creating a mass-circulation personal computer and will organize experiments throughout the world, particularly the Third World. It is one of the elements of industrial and technological renewal in our country."

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FRANCE

POLICE COMMUNICATIONS NETWORK ALLOWS INTEGRATED TRANSMISSION

Paris ARMEES D'AUJOURD'HUI in French Apr 82 pp 16-17

[Article by Lieutenant-Colonel Jean-Claude Fabre: "The Saphir Network"]

[Text] To raise the efficiency of its operations, the Gendarmerie inaugurated in 1981 a data transmission network. This network, which serves 350 subscribers and which will be serving more than 10,000 subscribers by 1986, provides telephone and data-processing interconnections extending as far as to include vehicular-borne terminals.

The Saphir network, although it might appear to be merely a communications facility supplementing existing radio networks and subnetworks, differs profoundly from them as regards:

--Its universal data-transmission function;

--Its technical innovations: The combination of telephony and data transmission on the same radio channel; its method of traffic management within a cell made up of several radio systems;

--The originality of its mobile radio teleprocessing terminal;

--Its potential for evolution towards a teleinformatics system in which the integration of telecommunications and data processing techniques will be even closer.

National and Departmental

The department is the elementary data-distributional zone. Its headquarters, the office of the departmental Gendarmerie group, in which is installed a packet switcher, is the switching hub where radio channels and PTT-provided specialized facilities terminate.

The point of termination of these facilities creates a demarcation between data transfer speeds and between interchange procedures, and thus establishes a separation of the Saphir network into two subsystem levels.

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The first of these levels--a nationwide, wire, grid-network subsystem--serves, by means of PTT-provided specialized links, the General Directorate of the National Gendarmerie, the Inspectorate of the National Gendarmerie, all its regional commands, legions and departmental groups, certain technical services and the seven principal airports.

The second--consisting of many radio subsystems, one per department and independently operated--makes use of the equipment and frequencies currently used for telephone communications and links the Gendarmerie's companies, brigades and certain of their vehicles.

Subscribers equipped with different terminals are interlinked by way of a branched structure of point-to-point circuits based on the hierarchic organization of the National Gendarmerie, or by way of multipoint links, the switching hierarchy in this case being maintained through the use of an appropriate address system.

From One to Nine Addressees

The transfer of centralized-data bank file reference operations and of messages between the two subsystem levels, regardless of addressee, is effected by means of automation incorporated into the switcher and in accordance with two transmission procedures: Packet switching and automatic management of radio channels. Radiotelephone communications are possible only within a department between subscribers equipped with adequate terminals.

The security of transmitted information is assured by means of a reception protocol that is individual to each subsystem to which it is assigned in the radio subsystem level, a procedure that regulates conflicts of access, an error detection and correction code, and a protection against jamming. Continuity of service is maintained by means of redundancy of sensitive components, emergency use of the switched public network, and the maintaining of telephone contact in the event of total failure of the network.

All subscribers are equipped with several address mechanisms enabling them to reach from one to nine addressees simultaneously on an individual basis, or to effect collective transmissions on a nationwide or departmental scale by unit groups or subgroups, or to effect broadcasts in accordance with the hierarchic configuration.

The supervision of the network (operations, traffic, backup in case of malfunction, and maintenance) is provided:

--At the national level by a control and metering center located next to the frontal switchers linking the network to the external data bases;

--At the departmental level by the Gendarmerie departmental group's communications center.

Terminal equipment of the transactional type provides a simple operating mode and functions according to the masking technique so that it can easily be served by nonspecialized gendarmes. The alphanumeric-screen terminals of the wire subsystem and their associated printer are in a fixed-station configuration and are used solely for the exchange of data.

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Principal Technical Characteristics

<u>Subsystem</u>	<u>Component</u>	<u>Description</u>
Control and metering center	Computer	Mitra 125 192K words
	Transmission	PTT-provided specialized facilities - 1200 bps
Wire subsystem	Packet switcher	TIT 7200 - 80-112K bytes
	Display console	SINTRA-ALPHA 15: 1,920 characters
	Printer	LOGABAX LX 213 and 103 - 180 and 100 c/sec
	Transmission	Radiotelephone channel - 1200 bps - FSK modulation - simplex or duplex
Radio subsystem (currently limited to Department of Somme	Radio equipment	TMF 623 - ERV 200
	Screen-type radio teleprocessing terminal	CSEE-TRT - Plasma screen - 12 lines, 40 characters per line - dimensions: 37 x 20 x 12 - weight: 7 kg - associated memory 4K bytes
	Printer	Bloc 60 CPS - 40 columns - speed 40 c/sec
	Simplified radio teleprocessing terminal	CSEE-TRT - Small keyboard - 8-character display line

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The radio subsystem terminals, which are of innovative design, are of two general types, according to their function:

--One is a screen-type radio teleprocessing terminal, where displayed-text and telephony interconnections are to be accommodated. In the vehicular version, this terminal consists of an outboard display screen, a fold-back keyboard and a separate unit housing the power supply and modem. In the fixed-station version, all the components are grouped into a single unit containing a printer as well;

--The other is a simplified radio teleprocessing terminal, where only telephone interconnections are to be provided.

This very heterogeneous network from the standpoint of its equipment, its transmission facilities and transmission procedures, actually constitutes an entirely homogeneous whole from the standpoint of the services it provides. It is thus the gendarme's day-to-day working tool but at the same time an efficient command system.

Biographical

An infantry reserve officer, Lt Col Jean-Claude Fabre entered the Gendarmerie in 1958. After several assignments, he was given command, in 1964, of the Saint-Pierre-et-Miquelon Company, and, in 1968, command of the Vienna Company. He is currently head of the Organization Methods and Data Processing Bureau in the General Directorate of the Gendarmerie.

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ITALY

DEVELOPMENT OF NEW OPTICAL FIBER 'X-81' ANNOUNCED

Milan CORRIERE DELLA SERA in Italian 4 May 82 p 15

[Article by special correspondent Giovanni Caprara: "Words Can Now Travel on Light Beams 100 Kilometers Long"]

[Text] Turin--"X-81" sounds as though it might designate a secret code. Actually, it is name of the new optical fiber which the CSELT [Telecommunications Research and Study Center] of Turin has designed, fabricated and, last week, exhibited to the Milan Press Club at a well-attended conference. Intense curiosity, lively interest, many questions, replies replete with foreign comparisons: Everything seemed to convey the importance of the disclosure. "We have called the new fiber the "X-81," explained Engineer Catania, head of the CSELT, "because it was developed around October 1981. We have not disclosed it heretofore because the result was exceptionally good and we wanted to repeat it several times to be sure of it." This did away with the initial curiosity regarding the strange denomination. Catania's quiet demonstration which followed responded almost automatically to the unvoiced questions generated instinctively by the circumstances. "The CSELT, with the backing of the SIP [Italian Telephone Company], the SIRT [Telecommunications] and other companies of the IRI [Industrial Reconstruction Institute]-STET [Telephone Finance Corporation] Group, completed recently the development of a special technology for the fabrication of optical fibers, thin glass threads 1/10 of 1 millimeter in diameter, with an extremely low attenuation that practically coincides with the minimum theoretically possible values..." Little by little, the physiognomy of the X-81 emerged.

The new fiber has an important quality, namely, the low value of attenuation of the signals transmitted through it. This means that the material of which it is made is of a high degree of purity and that method used to fabricate it of an advanced degree of perfection. "The degree of impurities these extremely low-attenuation fibers will tolerate," it was explained to us, "is around a few parts per billion for many of the metallic ions. To draw a comparison," we were told, "the finest optical glasses are made of materials with three times that many impurities." The transparency obtained with this new fiber is thus exceptional. Engineer Catania gave an example: "Consider," he said, "that an endoscope for medical use is made today with fibers having an attenuation of 3 dB per meter (the X-81 has an attenuation of 2 dB per kilometer); an endoscope made with one of our fibers would be capable of exploring the bottom of the Mariana

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Trench with a sharpness equal to that of an endoscope about 1 meter long." Another important characteristic is the length to which it can be drawn. This approaches 100 kilometers, with the possibility of transmitting 2,000 telephone conversations simultaneously, meaning that a single section of it can be used to interconnect two cities such as Milan and Turin, or Rome and Naples. Until now, commercial-grade optical fibers have been available in sections of up to 10 kilometers, and copper cables up to 2 kilometers. Practically speaking--as Engineer Ragone, general manager of the SIP [Italian Telephone Company] added--optical fibers, given their features and their low cost, are now on the verge of competitiveness with copper cables and are being resorted to entirely for many new installations. It should be added that, because of their nature, optical fibers are not subject to many disturbances that are typical of copper circuits and are not interfered with by atmospheric disturbances.

All of this--like everything else--has a history. And we heard it told within the walls of the CSELT in a silent and efficient atmosphere typical of conventional research centers. The same atmosphere, we might say, that we have savored during visits to internationally renowned foreign institutes. And this comparison at first glance is borne out in the results being obtained. We do not want to sound rhetorical, but in a nation whose research facilities are crumbling or nonexistent, one has the sensation, upon entering the CSELT, as in the case of a few other such rare centers, of finally being able to breathe. Heading the center is Professor Carassa, father of SIRIO the first Italian telecommunications satellite.

We were told that the CSELT employs 630 persons, 400 of whom are directly involved in research. The average age of holders of degrees is 33 years, while that of holders of diplomas is 23 years. "Getting in" here is apparently not very easy. One's degree must be virtually a summa cum laude; one's diploma must be lower than 54 over 60. Only thus can one enter upon a career as a researcher at CSELT, the growth of whose employees must be gradual--physiological, as Engineer Catania points out. Within the CSELT, a research leader has around him some 10 persons on average. Within the organization, the researcher is the object of much attention. Attention centers first and foremost on motivation, on providing a climate in which professionalism can operate, be fostered and be recognized, on updating of knowledge, and on adequacy of compensation.

From this environment are emerging today patents and research that are competitive on the international level, and this is fundamental to our economy and our growth, especially now that the Reagan administration has practically decreed an embargo on the advanced scientific and technological knowledge possessed by the United States. At the CSELT, while a fiber of even better quality, the "X-82," is being developed, intensive work is also being done in the field of microelectronics, a field to which our future is closely tied.

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